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HELLER EHRMAN WHITE & MCAULIFFE

ATTORNEYS

A PARTNERSHIP OF PROFESSIONAL CORPORATIONS

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LINDA R. LARSON
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January 14, 2000

SEATTLE
PORTLAND
TACOMA
ANCHORAGE

SAN FRANCISCO
LOS ANGELES
PALO ALTO

WASHINGTON, D.C.
HONG KONG
SINGAPORE

U.S. Environmental Protection Agency
Gregory J. Phoebe
Technical Enforcement Program
999 18th Street, Suite 500
Denver, CO 80202-2466

**Re: First Request for Information Pursuant to Section 104 of CERCLA For
the Vasquez Boulevard/I-70 Site, Denver, Colorado**

Dear Mr. Phoebe:

This document is the response of ASARCO Incorporated, formerly known as American Smelting and Refining Corporation, to EPA's request for information pursuant to section 104(e) of CERCLA regarding the Vasquez Boulevard/I-70 NPL Site in Denver, Colorado. Narrative responses to the information request and a notarized certificate are enclosed with this letter. The documents referenced as attachments in the narrative response are quite bulky and are being sent to you under separate cover.

If you have questions about the information or documents provided herewith, or if you do not receive the documents being sent separately, please contact me at (206) 389-6218.

Very truly yours,



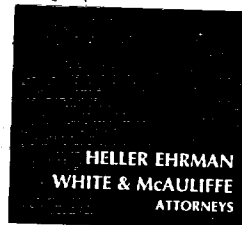
Linda R. Larson

Enclosures

cc: Matthew Cohn
Robert Litle

6100 COLUMBIA CENTER
701 FIFTH AVENUE
SEATTLE, WA 98104-7098

TELEPHONE: (206) 447-0900
FACSIMILE: (206) 447-0849



TO: Greg Thube
FROM: Hinda Hanson

Date 1-19-2000

- ☐ In accordance with your request
- ☒ For your information
- ☐ Please note and file
- ☐ Please note and mail
- ☐ Please note and return to me
- ☐ Please take charge of this
- ☐ Please answer sending me a copy of your letter
- ☐ Please prepare a reply for my signature
- ☐ Please speak to me re: Attached
- ☐ For your signature
- ☐ Your comments please

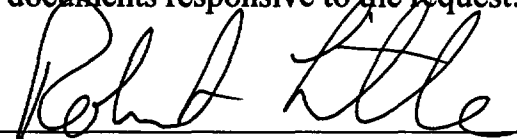
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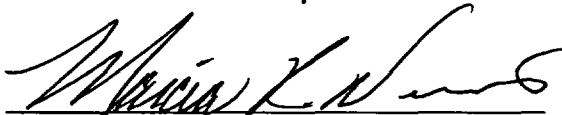
NOTARIZED CERTIFICATE

I, Robert Litle, having been duly sworn and being of legal age, hereby state:

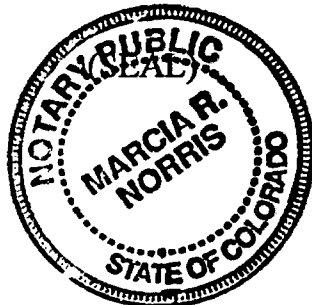
1. I am the person authorized by ASARCO Incorporated to respond to the Environmental Protection Agency's (EPA's) request for information concerning the Vasquez Boulevard & I-70 Site located in Denver, Colorado.
2. I have made a complete and thorough review of all documents, information, and sources relevant to the request.
3. I hereby certify that the attached response to EPA's request is true, accurate, and complete and contains all information and documents responsive to the request.


Robert Litle – Site Manager

Subscribed and sworn to me this 14
day of JANUARY, 2000.


Notary Public

My commission expires: 8-18-2002
My address is 495 E 51st AVE
DENVER, CO 80216



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Received
Office of Enforcement

JAN 20 2000

Compliance & Env. Justice

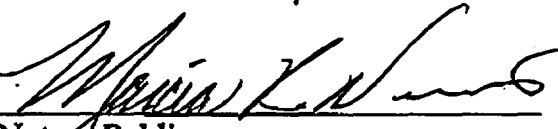
NOTARIZED CERTIFICATE

I, Robert Litle, having been duly sworn and being of legal age, hereby state:

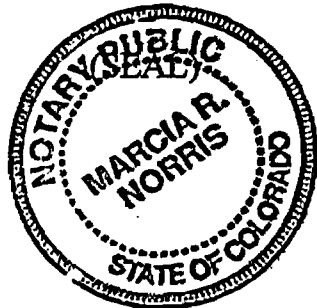
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2. I have made a complete and thorough review of all documents, information, and sources relevant to the request.
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Robert Litle – Site Manager

Subscribed and sworn to me this 14
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Notary Public

My commission expires: 8-18-2002
My address is 495 E 51st AVE
DENVER, CO 80216



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1/14/00 2:59 PM (16004.0132)

ORIGINAL WILL
BE SENT TO
YOU VIA FED
EX ON 1-18-2000

INTRODUCTION

This document is the response of ASARCO Incorporated ("Asarco") to the United States Environmental Protection Agency's First Request for Information for the Vasquez Boulevard/I-70 Site dated October 12, 1999. With permission from EPA Region VIII, the deadline for this response was extended until January 15, 2000.

In making this response, Asarco specifically reserves and does not waive or limit any objection it has or may have to the request, including, but not limited to, any objections based on the overly broad or unduly burdensome nature of the request or that the request is beyond the scope of CERCLA section 104(e). Given the breadth of EPA's request, it is impossible to search each and every file that may conceivably contain information responsive to the request. Asarco has engaged in a good faith effort to search company records for responsive information; that information is provided. Asarco is aware of the obligation to supplement this response if and when additional relevant and material information is discovered.

A. Globe Smelter, 495 East 51st Avenue, Denver, CO:

1. Detail the date(s) and fully describe the operations over time of Respondent at the Globe Smelter Facility.

Asarco has been the operator of the Globe Smelter for roughly 100 years. Consequently, it is impossible for the company to "fully describe" its operations throughout the century. However, as described below, there are documents available that provide a number of descriptions of the smelter's operations at different periods. Asarco has compiled a chronology of operations and will provide access to review and/or copies of the listed documents to EPA upon request.

CHRONOLOGY OF OPERATIONS

A chronology of Globe Plant operations is included as Attachment A.

SUMMARY DOCUMENTS

The following documents provide summary descriptions of Globe Plant operations, each tending to focus on different aspects or time periods. Asarco has already provided the EnviroGroup and TRC documents to EPA. The JACA, Iles, Sadar, and Quarterly Production Reports are included as Attachments B1, B2, B3 and B4.

1. EnviroGroup, 1998a. Historical Lead Operations, Globe Plant, Denver, Colorado. Submitted To Colorado Department of Public Health and Environment, March 20, 1998.

Describes lead smelter operations from plant construction in 1886 through 1919. Litharge operations from 1925 to the present day are briefly described, with an

emphasis on the sources and nature of lead air emissions. Note: Asarco operations did not begin until April 1899.

2. EnviroGroup, 1998b. Historical Arsenic Operations, Globe Plant, Denver, Colorado. Submitted To Colorado Department of Public Health and Environment, March 30, 1998.

Describes arsenic refining operations from circa 1910 through 1926, and cadmium refining operations from circa 1910 through 1993 with an emphasis on baghouse dust roasting and calcining operations. No information on cadmium purification, retort, sulfide, or high purity operations is provided. The emphasis of the report is on the sources and nature of arsenic air emissions.

3. EnviroGroup, 1998c. Evaluation of Extent of Impacts to Soils Due to Historic Air Emissions from the ASARCO Incorporated Globe Plant, Denver, Colorado. Submitted To Colorado Department of Public Health and Environment, April 7, 1998.

Provides additional detail on production and air emission rates related to historic lead (Appendix A) and arsenic (Appendix B) operations.

4. TRC, 1988. Draft for Public Comment Remedial Investigation Report, ASARCO Incorporated and State of Colorado Joint Study, Globe Plant Site, Denver, Colorado. TRC Environmental Consultants, Inc., September 20, 1988. Three Volumes. Describes historic and recent (circa 1988) Globe Plant processes, including lead smelting, arsenic refining, cadmium refining, and production of indium and thallium, and high purity metals. Flow charts for the recent (circa 1988) cadmium refining, litharge, and thallium processes are provided, along with an inventory of process materials and description of process wastes.

5. TRC, 1990. Draft for Public Comment Feasibility Study Report, ASARCO Incorporated and State of Colorado Joint Study, Globe Plant Site, Denver, Colorado. TRC Environmental Consultants, Inc., August 1990.. Two Volumes.

Appendix E provides an air emission inventory (for air dispersion modeling) that includes more detailed information on recent cadmium refining processes than provided in TRC 1988.

6. JACA Corp., 1992. Analysis and Alternatives - Air Emissions Control Study - Asarco Globe Plant, Denver, Colorado. Final Report, submitted to CDPHE on August 6, 1992.

Provides an air emission inventory (for air dispersion modeling) that includes more detailed information on recent cadmium refining processes than provided in TRC 1988 and TRC 1990.

7. Iles, Malvern W., 1902. Lead-smelting: The Construction, Equipment, and Operation of Lead Blast-Furnaces and Observations on the Influence of Metallic Elements on Slags and the Scientific Handling of Smoke. John Wiley & Sons, New York, 228p.

Provides detailed information on early lead smelting operations (1886 through 1900). This information is summarized in EnviroGroup 1998a. Note: Asarco operations did not begin until 1899.

8. Sader, J., 1952, Personal recollections of former employees, In The History of the Globe Plant, December 30, 1952, Anonymous.

Provides additional details regarding cadmium and arsenic operations circa 1910 through 1940's, based primarily on the recollections of former plant employees. In some cases, these recollections are inconsistent with more reliable sources such as engineering drawings (e.g., number of furnaces in a building), but provide information on procedures, production rates, and chronology that is not available elsewhere.

9. Quarterly Production Reports.

Current Globe Plant operations from the fourth quarter of 1996 through the third quarter of 1999 are summarized in quarterly production reports submitted to the Colorado Department of Public Health and Environment (Attachment B4).

OTHER REFERENCES

In addition to the above reports, which provide the best summaries of historic Globe Plant operations, the following references provide more details (and are referenced in the above documents). These documents can be provided to EPA on request if this level of detail is desired, except for Fell 1979, which is a copyright protected book available at local libraries.

Engineering and Mining Journal, Volume 43, p.10, January 1, 1887.

Engineering and Mining Journal, Volume 43, p.100, February 5, 1887.

Engineering and Mining Journal, Volume 43, p.425, June 11, 1887.

Engineering and Mining Journal, Volume 46, p.134, August 18, 1888.

Engineering and Mining Journal, Volume 54, p.62, June 16, 1892

Fell, James E., Jr. 1979. Ores to Metals, The Rocky Mountain Smelting Industry. University of Nebraska Press, 341p.

Globe Plant Research Report, 1951, Godfrey Roasters, operational data, July 20, 1951.

Globe Plant Operating Report, 1956, Godfrey Roasters, Summary of Campaign, December 30, 1956

Globe Plant Operating Report, 1970, Godfrey Roasters 1970 Campaign, September 29, 1970.

Globe Plant Operating Report, 1967, 1966 Godfrey Roasters, Godfrey Roaster Campaign, February 7, 1967.

Iles, Malvern W. 1900. Cost of Smelting and Refining. *In Lead Smelting and Refining*, W.R. Ingalls, ed., 1906, reprints from *The Engineering and Mining Journal*, p.96-103.

Labbe, A. L., 1940, letter to R.F. McElvenny re. "Globe Plant - Acid Smoke", November 15, 1940.

Miles, W.L., 1970, Godfrey Roaster Operations and the Build-up of Arsenic and Thallium at Globe, January 9, 1970.

Pufahl, O. 1905. The Globe Plant of the American Smelting and Refining Company. *In Lead Smelting and Refining*, W.R. Ingalls, ed., 1906, reprints from *The Engineering and Mining Journal*, p.304-305.

Teats, Roscoe, August 20, 1926. Memorandum to McElvenny, Globe Plant Manager.
Anonymous, April 1, 1928. Outline of Cadmium Process.

Teats, R., 1940, Letter to R.P. Reynolds, Globe Plant Manager, with attached hand-written calculations, July 9, 1940

OTHER DOCUMENTS

Other documents exist that include descriptions of certain aspects of Globe Plant operations over time. These are listed in the indices provided in response to request No. A.4 and can be provided on request if still possessed by Asarco.

2. Excluding out-of-state shipments of product, identify whether soil (e.g., sand, loam, fill) or any other materials, including but not limited to, materials containing arsenic (e.g., slag, flue dust, arsenic trioxide, debris) have been excavated or removed (to include any sale, transfer, giving, change in ownership, or change in possession) from the Site by Respondent or others. If so, detail:

- a. Amount and date(s) of soil or other materials removed from Site;**
- b. Physical and chemical nature of materials removed;**

- c. **Identity of person(s) who removed materials and date(s) of removal;**
- d. **Final disposition of such materials.**

It is Asarco's understanding based on conversations between Linda Larson, Asarco's legal counsel, and Matt Cohen of EPA that the definition of "Site" for the purposes of responding to this question means the Globe Plant and not the other smelters or the surrounding neighborhoods, and that this request also excludes in-state shipment of product and by-product (i.e., in-process materials shipped to other plants for further processing). We have been unable to locate relevant records for the early decades of the plant. Based on our review of available records, the materials listed below have been excavated or removed from the Globe Plant, excluding shipments of product or by-products.

C solid waste (trash)

Currently, five 3 cubic yard containers are picked up once per week by Waste Management. In addition, one 30 cubic yard container is picked up as needed, about 25 to 30 times per year. Waste includes plastic, wood, cardboard, glass. Office paper is recycled by Curbside Recycling about 5 times per year (about 300 lbs per year). Records from the 1979 time period indicate that approximately 24,000 pounds per year of scrap paper, boxes, lumber, etc. were collected by Capitol City Disposal Co., 2300 Joliet Street, Aurora, Colorado (E.C. Pugh memo dated May 11, 1979). Similar wastes were likely removed from the Globe Plant throughout its history.

C scrap metal

Currently, Duwald Steel/Commercial Iron & Metal Co. , 1100 Umatilla Street, Denver, Colorado picks up scrap metal on an annual basis. In 1998, for example, approximately 70,000 lbs of scrap metal were removed by this company, including scrap lead, aluminum, stainless steel, copper, and iron. During cadmium electrolytic operations (c. 1979), approximately 7500 pounds of scrap iron anodes were sold per year to Iron & Metal, Inc., 5555 Franklin, Denver, Colorado, and approximately 10 tons of regular scrap iron - worn out press plates and frames, pipe, flue sections, etc. were sold to J. Bornstein, 1615 California, Rm 210 (answering service), Denver, Colorado (E.C. Pugh memo dated May 11, 1979).

C used oil

Used oil is picked up by Mesa Environmental, a division of Mesa Oil, Inc., 7239 Bradburn Blvd., Denver, Colorado, several times each year. In 1998, 639 gallons were recycled; 1,149 gallons were recycled in 1999.

C hazardous waste

Shipments of hazardous waste from the Globe Plant since 1997 includes

process debris, wastewater treatment plant sludge, baghouse dust, PCBs, fluorescent light ballasts and waste paint/solvents. Most waste is shipped to the Deer Trail Safety-Kleen facility; however, some waste has been shipped to Safety-Kleen's Wichita, Kansas facility, the Chemical Waste Management facility in Henderson, Colorado, and the Recyclights facility in Bloomington, Minnesota. Approximately 81,000 lbs of hazardous waste was shipped in 1997, 249,000 lbs in 1998, and 110,000 lbs in 1999. The process debris, wastewater treatment plant sludge, and baghouse dust may contain lead, cadmium, selenium, and/or small amounts of arsenic. Manifests can be provided on request.

C slag removed from floodplain portion of Globe Plant and Annex property

Lead blast furnace slag (quantity uncertain) was removed from former Asarco property east of Washington Street (see figure in Attachment C1) by the Denver Slag Company (address unknown) between circa 1926 and circa 1947, and from the Globe Plant (371,438 tons) by the Chicago Burlington & Quincy Railroad Company, 547 West Jackson Blvd, Chicago, Illinois, between 1937 and 1947. Records also indicate that the Western Paving Construction Company, 5230 Washington Street, Denver, Colorado, also purchased some of the slag for asphalt mixes.

Various slag assays are included in Attachment C2.

C "loam" for pavement aggregate

Asarco sold "loam" to Mr. E. G. Taylor, 4804 St. Paul Street, Denver who in turn sold the "loam" to the City of Denver for use in mixing asphalt and similar mixtures circa 1936. Asarco was apparently paid for the load after Mr. Taylor received his payment from the City. No information has been found that identifies the exact nature of the "loam" material (other than its use in asphalt and similar mixes), the area from which it was removed, or the quantity removed. Because this operation occurred during the same time period that slag was being removed from the Globe Plant, the "loam" may have consisted of fine slag particles or residue mixed with some soil, such that the slag particles provided a source of aggregate for the asphalt. See Attachment C2 for slag assays.

C Spent electrolyte solution

Spent electrolyte solution from the cadmium refining process was piped directly to the Bennett Chemical plant located one block west of the Globe Plant, during the 1950's. Bennett apparently extracted the zinc for fertilizer production. The plant was demolished in the mid 1970's. The electrolyte solution contained zinc and cadmium but no significant arsenic. The quantity of solution piped to Bennett Chemical is not known. Chemical analyses of spent electrolyte solution are included in Attachment C3.

C Soils excavated for Terrace Drain construction

Soils excavated for Terrace Drain construction pursuant to the Consent Decree between the State of Colorado and Asarco were placed on the Former Neutralization Pond (FNP) in the northwest corner of the site. Approximately 22,000 to 27,000 cubic yards of excavated soil were placed on the FNP. The soils contained elevated concentrations of cadmium, arsenic, and lead. A typical analysis is contained in Attachment C4.

3 Other materials

Review of historic air photos and site maps does not indicate any significant excavation or removal of native soils at the Globe Plant or the property east of Washington (former Clifford tract, now owned by Heller). Drilling and test pit information suggests that debris from demolition of former plant buildings was buried in place. Other materials were likely salvaged.

3. Identify releases of chemical(s) to the environment from the Site including location(s) and dates of such releases. For each such release, include the chemical(s) name and amount.

Given that the smelter has been in operation for over 100 years, it is impossible for Asarco to identify each and every release that may have taken place during that period. The following is a summary of the information available to the company at this time, most of which is based upon relatively recent environmental investigations of the site.

The general nature and extent of historic releases of chemicals to the environment (groundwater, surface water, sediment, surface soils, air) are described in TRC 1988 and TRC 1990 (see response to question A.1). In general, the approximate time period of the release(s), chemicals, and the extent of impact are characterized, but exact dates and quantities of historic releases are not known. Information is provided for a variety of metals, including arsenic, cadmium, lead, and zinc. Asarco understands EPA has the TRC reports but will provide copies on request.

Historic lead and arsenic air emissions from the Globe Plant are described in EnviroGroup 1998c, including approximate time periods, emission locations, and estimated quantities. More recent cadmium and lead air emissions from cadmium refining operations are estimated in TRC 1990 and JACA 1992, including locations of emission points and estimated quantities. Air emission estimates (for cadmium and arsenic) are provided for current operations in the Quarterly Production Reports (see response to question A.1 for more detailed information on these references). Asarco understands EPA has the EnviroGroup and TRC reports but will provide copies on request. Copies of JACA 1992 and the Quarterly Production Reports are provided in Attachments B2 and B4.

Monthly reports of emission estimates for sources identified in Attachment 1 to the Compliance Order on Consent with the Air Pollution Control Division of CDPHE for the period October 1996 through the present are provided in Attachment D1.

Toxic Release Inventory (TRI) reports submitted pursuant to SARA Title III Section 313 since 1987 provide information on modern day releases to the environment meeting applicable threshold quantities (Attachment D2).

Additional information on discharges to the sanitary sewer system is provided in Periodic Compliance Reports submitted to the permit authority from 1987 through present (Attachment D3).

4. Provide a complete document index including, but not limited to, those documents which may provide information in regard to the following:

a. Information on historical and current operations at the Site, including but not limited to, a detailed description of process flow, designed capacity, operating efficiency, production rates, quantities of raw materials processed, quantity and origin of mineral ores used at the Site, quantity of product shipped from the Site and waste disposal practices;

It is Asarco's understanding based on conversations between Linda Larson and Matt Cohen that for the purposes of question A.4, "Site" refers to the Globe Plant property. An index is provided in Attachment E, consisting of the following sub-indices:

- E1. A list of documents referenced in response to question A.1
- E2. An index of documents produced by Asarco during the natural resources damages lawsuit brought by the State of Colorado, provided in electronic format (text file) due to its length.
- E3. The parties' indices of trial exhibits for the Escamilla class action lawsuit
- E4. Indices of documents produced by Asarco during class certification for the C. De Baca class action lawsuit, including Asarco's log of privileged documents. By providing the privilege log, Asarco does not waive and continues to assert the privileges described in the log with respect to the listed documents. The lists of trial exhibits for Asarco and the plaintiffs are also included.
- E5. Lists of trial exhibits for Asarco and Century Indemnity created for Insurance Company of North America et al. vs. ASARCO Incorporated.

- E6. An index of historic engineering drawings and maps of the Globe Plant
- E7. An index of reports prepared pursuant to the Consent Decree and Statement of Work entered July 15, 1993.
- E8. Index of permits related to Globe Plant.
- E9. Index of real estate records.
- E10. Disclosure statements and deposition transcripts of expert witnesses.

b. Scientific reports or documents discussing material releases on or about the Site, including but not limited to the nature and extent of smelter emission releases;

Scientific reports and documents discussing material releases on or about the Globe Plant site, including the nature and extent of smelter emission releases, are included among the documents listed in response to A.4.a, above (Attachment E). Other reports or documents include those prepared by or for outside agencies, such as the Colorado Department of Public Health and Environment (formerly the Colorado Department of Health) and the U.S. Environmental Protection Agency, such as the Vasquez Boulevard - I70 NPL site reports, may not be included on the indices provided. Asarco assumes that EPA already has these documents but will produce a list of any such reports it possesses upon request. (See also response to question D2).

c. Current and historical title and ownership/lease information regarding the site;

Documents containing information about current and historical title and ownership/lease information regarding the Globe Plant site are included among the documents listed in the indices provided in response to request A.4.a. (Attachment E). These include but may not be limited to the following documents:

Sanborn maps dated 1890, 1904, 1929, 1950 (Attachment E2)

Baist's Real Estate Atlas of Surveys of Denver dated 1905 (Attachment E2)

Fell, James E., Jr. 1979. Ores to Metals, The Rocky Mountain Smelting Industry. University of Nebraska Press, 341p. (Attachment E1)

Agreement between Heller and Asarco dated August 6, 1946 for Heller to purchase the former Clifford tract from Asarco, located on the east side of Washington Street.

Index of real estate documents (Attachment E9).

d. Transaction documents supporting information provided in response to question 2 above.

Transaction documents supporting information provided in response to question 2 above are included among the documents listed in the indices provided in response to request A.4.a. (Attachment E). These include but may not be limited to the following documents:

Agreement between Taylor and Asarco dated March 6, 1936 for Taylor to purchase "loam" from Asarco, to be resold by Taylor to the City of Denver for asphalt paving and similar mixtures (Attachment E2).

Agreement between Chicago Burlington & Quincy Railroad Company and Asarco dated May 1, 1937, for CB&Q to purchase lead blast furnace slag from Asarco and to remove purchased slag from the property (Attachment E2).

Asarco assumes that EPA has copies of hazardous waste manifests from 1997 through 1999, but will provide an index of these documents if requested.

Invoices from trash, waste oil, recycling, and hazardous waste transporters and disposal facilities can be provided if desired.

e. Scientific reports analyzing soils, including those neighborhoods in vicinity of the Site;

Scientific reports analyzing soils, including those neighborhoods in the vicinity of the Globe Plant site, are included among the documents listed in the indices provided in response to request A.4.a (Attachment E). These include but may not be limited to the following documents:

TRC, 1988. Draft for Public Comment Remedial Investigation Report, ASARCO Incorporated and State of Colorado Joint Study, Globe Plant Site, Denver, Colorado. TRC Environmental Consultants, Inc., September 20, 1988. Three Volumes. Includes the results of soil reports prepared by others on behalf of CDH (now CDPHE) circa 1985. (Attachment E1).

TRC, 1990. Draft for Public Comment Feasibility Study Report, ASARCO Incorporated and State of Colorado Joint Study, Globe Plant Site, Denver, Colorado. TRC Environmental Consultants, Inc., August 1990. Two Volumes. (Attachment E1).

EnviroGroup, 1998. Evaluation of Extent of Impacts to Soils Due to Historic Air Emissions from the ASARCO Incorporated Globe Plant, Denver, Colorado.

Submitted To Colorado Department of Public Health and Environment, April 7, 1998. (Attachment E4).

EnviroGroup, 1997. Evaluation of Anomalous Arsenic Concentrations in Surface Soils, Asarco Globe Plant Site, Denver, Colorado. Submitted to CDPHE, April 15, 1997. Three volumes. (Attachment E4).

Drexler, John D., 1998. The Source of Anomalous Arsenic Concentrations in Soils from the Globeville Community -- Denver, Colorado. Prepared on behalf of CDPHE, June 9, 1998. (Attachment E4).

EnviroGroup Limited, 1993 through 1999. Design Investigation Reports and Supplemental Design Investigation Reports. Reports presenting the results of Statement of Work soil sampling program. (Attachment E7).

Jensen, S. and Johnson, C., 1985. Investigation of heavy metals associated with soil and vegetation in the vicinity of the Globe (ASARCO) smelter, Adams/Denver Counties, Colorado. Report by ERI-Logan, Inc. (Attachment ?)

Cassidy, D. J., 1983. Test sample metal concentrations, Internal Asarco report to L. Landers, Globe Plant, August 5, 1983. (Attachment E2)

Spickelmier, J., 1969. Report on soil samples collected around the Globe Plant perimeter. September 17, 1969. Internal Globe Plant report. (Attachment E2).

Coats, M., 1972. Three memoranda to Nelson providing off-site soils data. dated June 29, 1972; July 3, 1972; and July 26, 1972. (Attachment E2).

Asarco has not prepared an index of reports prepared by EPA, its contractors, and other parties related to the VB-I70 site, and contained in the Administrative Record, although it may possess copies of some of these reports. An index of these documents will be prepared on request by EPA.

f. Current and historical maps (including current and historical aerial maps) of the Site;

An index of current and historical maps and aerial photographs of the Globe Plant site is provided in Attachment E7.

g. Permits related to the Site;

An index of permits related to the Globe Plant site is provided in Attachment E8.

h. Environmental studies commissioned or acquired regarding the Site;

Environmental studies commissioned or acquired regarding the Globe Plant site, are included among the documents listed in the indices provided in response to request A.4.a (Attachment E), including those listed in response to question A.4.e. Other documents include but may not be limited to the following documents:

MRI, 1988. Asarco-Globe, Primary Cadmium Refinery -- Assessment of Health Risk. MRI Project No. 8985-07. Prepared for U.S. EPA, Region VIII, January 1988.

Fred C. Hart and Associates, 1982. Field Investigations of Uncontrolled Hazardous Waste Sites, Asarco Study Plan.

Ecology & Environment, Inc. 1983. Asarco Globe Plant Interpretive Report, EPA Site COD-007-063-530, TDD R8-0302-06A.

USEPA, 1982. National Enforcement Investigations Center. Results of Air Monitoring Conducted at the Asarco Globe Plant, Denver, Colorado. (Attachment E2).

i. Sampling data in regard to the Site, including surrounding neighborhood;

Sampling data for the Globe Plant and surrounding neighborhood are found in reports included among the documents listed in the indices provided in response to request A.4.a (Attachment E), including those specifically listed in response to question A1, A.4.a, and A.4.h. Other documents listed in the indices in Attachment E may contain sampling data, including but not limited to the following documents:

Thomas, M. D., 1951. Letter to J.P. Harrison of the American Smelting and Refining Company, presenting dust pan sample results. May 4, 1951. (Attachment E2)

Quarterly groundwater, surface water, sediment, and ambient air data collected by Asarco and provided to CDPHE since the RI/FS, pursuant to the Consent Decree. (Attachment E7)

j. Correspondence (e.g., reports, memorandums, letters, email) addressing contaminants on or about the Site;

Included in response to question A.4.a, above. (Attachment E).

k. Health Studies;

Health studies are included among the documents listed in the indices provided in response to request A.4.a (Attachment E), including those listed in response to question A.4.h. Other documents include but may not be limited to the following documents:

Putnam, 1989. Public Health Evaluation, ASARCO Incorporated Globe Plant Site, Denver, Colorado. July 1, 1989. Draft for Public Comment. (Attachment E3).

Wysowski et al., 1977. Community Cadmium Exposure, Denver, Colorado. Report dated February 9, 1977. (Attachment E2).

ATSDR, Public Health Assessment, Globe Plant Site

Annual medical monitoring summary reports for the Globeville community

l. Legal documents/files relative to the nature, extent and cause of environmental contaminants on or about the Site:

Non-privileged indices relative to the nature, extent and cause of environmental contaminants on or about the Globe Plant are included among the documents listed in the indices provided in response to request A.4.a (Attachment E).

As is evident from the size of the indices, producing "legal documents/files relative to the nature, extent and cause of environmental contaminants on or about the Site" would be unduly burdensome and constitutes an arbitrary and capricious request. Further, Asarco does not waive any applicable privileges with respect to such files and documents. Asarco has made a good faith effort to highlight or provide the most relevant and useful nonprivileged documents in response to this request, and will continue to work with EPA with respect to other nonprivileged legal documents listed in the indices. The following materials related to expert testimony in the C. DeBaca litigation are attached (Attachment E10):

Rule 26 disclosure and deposition transcript for Alan D. Zunkel, D. Sc., P.E.

Rule 26 disclosure, deposition transcript, and disclosure of rebuttal opinions for Andy Davis, Ph. D.

Deposition transcript for John W. Drexler, Ph.D.

m. Listing and general description of pending and settled legal actions in regard to the Site and attorney representing Respondent and Plaintiff;

Case Name: State of Colorado v. ASARCO Incorporated

Court and Docket No.: Civil Action No. 83-C-2383, U. S. District Court for the

District of Colorado

Description: the State of Colorado filed suit under the natural resource damage provisions of CERCLA in 1983, alleging that releases of "hazardous substances" from the Globe Plant damaged the natural resources of the State. After several years of joint investigation of the nature and extent of the environmental impact of the plant, Asarco and the State agreed in 1993 to the entry of a consent decree that incorporated the requirements of the then-Colorado Department of Health's Record of Decision (ROD). The ROD and consent decree require remediation of the plant site and some off-site properties in the vicinity of the plant.

Counsel Involved:

for Asarco:

William E. Murane, Esq.
Holland & Hart
Denver, CO

for State of Colorado:

Stephen M. Brown, Esq.*
Adam Babich, Esq.*
Office of the Colorado Attorney General
Denver, CO

(*Asarco does not know whether Messrs. Brown or Babich are still employed by the Colorado A.G.'s office)

Case Name: Escamilla v. ASARCO Incorporated

Court and Docket No.: Civil Action No. 91 CV 5716, District Court for the City and County of Denver.

Description: In 1991, residents of the neighborhood adjacent to the Globe Plant filed suit, alleging that cadmium, arsenic, and lead from the plant contaminated their neighborhood and damaged their properties. (The plaintiffs later abandoned their claim of lead contamination.) The district court certified a class of property owners of the area bounded on the north by East 60th Ave., on the east by Franklin St. from 60th Ave. to the South Platte River, on the south by East 46th Ave., and on the west by I-25. The court denied the plaintiffs' request to certify a class of claimants seeking medical monitoring relief. After a trial on the property damage claims in early 1993, the parties agreed to and the court approved a settlement providing monetary recovery and remediation for the class of property owners.

Counsel Involved:

for Asarco:

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Denver, CO

for plaintiffs:

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Macon Cowles & Associates
Boulder, CO

Kieron Quinn, Esq.
Quinn, Ward & Kershaw
Baltimore, MD

Kevin S. Hannon, Esq.
Law Firm of Kevin S. Hannon
Denver, CO

William Rossbach, Esq.
Rossbach & Whiston
Missoula, MT

Mary Kane, Esq.
Kane & Harrington
Denver, CO

Case Name: Insurance Co. of North America v. ASARCO Incorporated, et al.

Court and Docket No.: No. L-6164-93, Superior Court of New Jersey, Law Division, Middlesex County

Description: In 1993, one of Asarco's insurers filed suit, seeking a declaration that it was not obligated under the policies it issued to Asarco to provide coverage for environmental liabilities at 66 sites in the U.S. and Canada, including the Globe Plant site. Asarco's other insurance carriers were joined as parties in the action. The Globe site was selected as an initial site for discovery, motions practice, and trial purposes. In 1997, the trial court granted summary judgment in favor of some of the insurers concerning the Globe site, and scheduled a trial between Asarco and the remaining insurer (INA) to determine coverage for that site. After the trial date was postponed, Asarco and INA settled their dispute concerning the Globe site. Asarco appealed the summary judgment ruling in favor of the other insurers concerning the Globe site. In July 1999, the Appellate Division of the Superior Court of New Jersey affirmed the trial court ruling; as of November 16, 1999, Asarco's petition for certification of that decision is pending before the Supreme Court of New Jersey.

Counsel Involved:

for Asarco:

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John G. Buchanan, Esq.

D. Jeffrey Campbell, Esq.
Porzio, Bromberg & Newman

Covington & Burling
Washington, DC

Morristown, NJ

for Insurance Company of North America:

Guy Cellucci, Esq.
Michael Olsan, Esq.
White & Williams
Philadelphia, PA

for American Home Assurance Co. and Lexington Insurance Co.:

Barry Ostrager, Esq.
David J. Woll, Esq.
Simpson Thatcher & Bartlett
New York, NY

Brian Coyle, Esq.
Cozen & O'Connor
Newark, NJ

for Aetna Casualty & Surety Co.:

Peter Mueller, Esq.
Harwood Lloyd
Hackensack, NJ

for Hartford Accident & Indemnity Co., First State Insurance Co., New England Insurance Co., and Twin City Fire Insurance Co.

Michael Hooks, Esq.
Forsberg & Umlauf
Seattle, WA

Ignatius J. Melito, Esq.
Jerome Abelman, Esq.
Melito & Adolfsen
New York, NY

for Allstate Insurance Co. as successor in interest to Northbrook Excess and Surplus and Everest Re, f/k/a Prudential Re and Gibraltar Casualty Co.:

Richard Crooker, Esq.
Cuyler Burk
Parsippany, NJ

for New Jersey Property-Liability Insurance Guaranty Assoc. and New Jersey Surplus Lines Insurance Guaranty Fund:

Beth Hardy, Esq.
Peter Olsen, Esq.
Francis & O'Farrell
Morristown, NJ

for Evanston Insurance Co.:

Jonathan S. Reed, Esq.
Traub, Elgin, Lieberman & Strauss
Hackensack, NJ

for International Insurance Co.:

Vincent S. Ziccolella, Esq.
Robert Brigantic, Esq.
Newark, NJ

for Commercial Union Insurance Co. as successor to Employers Liability Assurance Corp.:

David Cassidy, Esq.
Richard Feldman, Esq.
Rivkin, Radler & Kremer
Uniondale, NY

for Fireman's Fund Insurance Co.:

Alexander Kovacs, Esq.
Caron, McCormick, Constants & Goldberg
Rutherford, NJ

for Certain Underwriters at Lloyd's of London:

Robert Priestley, Esq.
Mendes & Mount
Newark, NJ

for Columbia Casualty Co.:

John LaVecchia, Esq.
Connell, Foley & Geiser
Roseland, NJ

Case Name: C. DeBaca v. ASARCO Incorporated

Court and Docket No.: Case No. 97 CV 6180, District Court for the City and County of Denver

Description: In 1997, residents of the part of the Globeville neighborhood south of I-70 filed suit, alleging that arsenic, lead, and cadmium from the Globe Plant contaminated their neighborhood and damaged their properties. The district court

certified a class of property owners of the area bounded on the north by I-70, on the east by Washington Street, on the south by East 41st Ave. and the railroad yard, and on the west by I-25. In 1999, the parties agreed to a settlement providing monetary recovery and remediation for the class of property owners and non-owner residents. The court held a hearing on the proposed settlement on October 22, 1999, and as of November 16, 1999, still has the parties' request to approve the settlement under consideration.

Counsel Involved:

for Asarco:

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Scott S. Barker, Esq.
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Denver, CO

for plaintiffs:

Miles M. Gersh, Esq.
Gersh & Helfrich
Denver, CO

Randall M. Weiner, Esq.
Boulder, CO

J. Kemper Will, Esq.
Burns, Figa & Will
Englewood, CO

Case Name: Hindry v. Globe Smelting

Description: This action was apparently filed in 1897 and alleged property and livestock damage due to sulfur dioxide and metals from the smelter. It apparently settled sometime before 1910.

n. Chemical analyses of product produced at the Site.

Except for documents included in the indices provided in response to question A.4.a, chemical analyses of product are only available back to 1996. No index of analyses performed since 1996 exists.

B. Omaha and Grant Smelter (former operations included approximately 50 acres south of current Denver Coliseum southward near 42nd Avenue and St. Vincent Street):

1. Fully describe and provide documents detailing the corporate history of ASARCO including, but not limited to, ASARCO's association with The American Smelting and Refining Company and with Omaha Grant Smelting Company.

The American Smelting and Refining Company¹ was organized in April, 1899, under the laws of the State of New Jersey to own and manage the properties of seventeen corporations and one partnership. The new company purchased the assets of the Omaha and Grant Smelting and Refining Company, including the Denver smelter and a refinery located in Omaha, Nebraska. The cash amount paid for these assets is unknown. After the asset purchase, Omaha and Grant never dissolved, but instead expired by statutory limitation in 1912.

As a result of the asset purchase, three Omaha and Grant shareholders, E.W. Nash, Guy C. Barton and J.B. Grant, each of whom owned 10% of Omaha and Grant stock, were listed as holders, respectively, of 1000 shares of Asarco preferred stock and 700 shares of Asarco common stock. The initial offering of Asarco stock was 650,000 shares. These three men became involved in the management of Asarco and were elected to the Board of Directors, of which there were a total of 16.

The following documents are provided in Attachment F in response to question B.1

- F1. American Smelting & Refining Company Annual Reports (1900 to 1939).
- F2. Copies of Asarco Board of Directors Minutes, Executive Committee Minutes, and Advisory Committee Minutes in which the Grant and/or Globe Smelters are mentioned.
- F3. The Engineering and Mining Journal, April 15, 1899 (lists the original directors, officers, and plant managers of the American Smelting and Refining Company)
- F4. Agreement related to the 1899 transfer of the Omaha Grant property.

The following documents are not provided but are published books available at libraries, providing information on the acquisition of the Omaha Grant smelter by the American Smelting and Refining Company in 1899.

Isaac F. Marcosson 1949. Metal Magic: The Story of the American Smelting and Refining Company.

Fell, James E., Jr. 1979. Ores to Metals, The Rocky Mountain Smelting Industry. University of Nebraska Press, 341p.

2. Provide a legal description of the property or properties The

¹ The American Smelting and Refining Company and ASARCO Incorporated are the same corporation. The company's name was changed in 1975.

American Smelting and Refining Company acquired, upon which the Omaha and Grant Smelter facility operated.

Asarco has made a good faith search of its corporate records and has been able to locate only a few real estate or transaction records related to the Omaha and Grant Smelter. Historic property maps are provided in Attachment F5, which indicate property boundaries and ownership at various time periods, and documents related to the transfer of certain parcels to the Union Pacific Railroad, the Chicago & Quincy Railroad, and the City of Denver are provided in Attachment F6.

3. Provide copies of all documents evidencing or relating to the property or properties identified in response to #2 above, including but not limited to, ownership, operation or lease information. Include copies of purchase and sale agreements, deeds, leases, etc.

Asarco has made a good faith search of its corporate records and has been able to locate only a few real estate or transaction records related to the Omaha and Grant Smelter. See documents provided in Attachment F2.

An agreement relating to the 1899 transfer of the Omaha Grant property is provided in Attachment F1. Historic property maps are provided in Attachment F5 and title transfer documents are provided for some parcels in Attachment F6, which indicate property boundaries and ownership at various time periods. In addition, the following documents provided in Attachment F provide information on the historic operation of the Omaha Grant smelter by Asarco, and uses of the property and operation of the tall stack by the City of Denver.

F7. "History of the Grant Smelter and Stack" by Robert C. Whitcomb (Colorado School of Mines student paper, March 12, 1952)

F8. Engineering drawings and site maps

F9. Historic photographs

F10. Newspaper clippings

4. Describe the period(s) Asarco or its predecessors held the Omaha and Grant Smelter facility and describe any and all uses of the property during that period.

The American Smelting and Refining Company incorporated and took over the Omaha and Grant Company in April 1899. The Omaha and Grant smelter continued its lead smelting operations until the summer of 1903, when a strike led Asarco to permanently close the smelter. The engineering drawings and site maps in Attachment F4 indicate the various facilities used for roasting and smelting the lead ores. Asarco is not aware of any other uses of property during that time period.

Subsequently, portions of the property were sold to the Union Pacific Railroad Company and the City of Denver.

5. Identify and provide title documents showing transfer of the property or properties comprising the Omaha and Grant Smelter facility and identify the current and historical owner(s) of the property or properties. Additionally, provide any information you may have in regard to property use subsequent to sale of the property or properties by Respondent.

Asarco has made a good faith search of its corporate records and has been able to locate only a few documents related to the Omaha and Grant Smelter. An agreement relating to the 1899 transfer of the Omaha Grant property is provided in Attachment F1. Historic property maps are provided in Attachment F5 and documents related to title transfer of certain parcels to the Union Pacific Railroad, the Chicago & Quincy Railroad, and the City of Denver are provided in Attachment F6. According to the documents provided in Attachments F7 and F10, purchased the refinery portion of the former Omaha Grant smelter and used the tall stack as an incinerator for municipal wastes between 1944 and 1950. In 1950, the City of Denver demolished the stack, creating a cloud of white dust that settled over the area.

One of the historic site maps provided in Attachment F8 indicate that the Union Pacific Railroad Company purchased portions of the Omaha Grant property that where most of the refinery buildings were previously located and where some slag was still present, circa 1909. The slag has since been removed, although Asarco has no information on the fate of the slag.

6. Provide any current or historical map you may have in regard to the Omaha and Grant Smelter facility.

Historical maps are provided in Attachments F5 and F8.

7. Provide any reports you may have in regard to historical operations conducted at the Omaha and Grant Smelter facility including, but not limited to, a detailed description of process flow, designed capacity, operating efficiency, production rates, quantities of raw materials processed, quantity and origin of mineral ores used at the Site, quantity of product shipped from the Site and waste disposal practices.

Asarco assumes that for the purposes of responding to questions in Section B, the "Site" refers to the Omaha and Grant Smelter facility only and not the VB-I70 Site. Asarco does not have any reports on historical operations conducted at the Omaha and Grant Smelter facility, other than the student paper provided in Attachment F6. Fell (1979) provides some descriptions of overall plant capacity, and

some of the drawings in Attachment F8 and Sanborn maps in Attachment F5 indicate the locations of certain buildings and, in some cases, furnaces, used in the operation. Fell (1979) provides some information on general sources of ore processed at the Omaha Grant Smelter. The locations of slag piles are noted on some of the drawings and a portion of the historic slag pile is visible in the USDA 1937 aerial photograph. Some drawings in Attachment F8 indicate that Asarco leased a portion of the property to the Amiesite Road Company circa 1910 – 1912, and that a portion of the slag was removed by this company. Asarco has no other information on waste disposal practices at the Omaha Grant Smelter, other than the information provided regarding activities by the City of Denver in response to question B.6.

8. Describe and, where available, provide maps that describe the physical characteristics of the Site, including but not limited to the following:

- a. Surface structures**
- b. Ground water wells**
- c. Ore treating facilities**
- d. Additions, demolitions, changes to the physical structures on or about the Site property;**
- e. Any structures designed and/or operated to collect flue dust.**

The following discussion describes the features requested in questions 8a, c, d, and e. Asarco has no information on groundwater wells at the former Omaha Grant smelter site.

According to Fell (1979), construction on the Omaha Grant (referred to as Grant hereafter) smelter began in July 1882. Denver city and Sanborn Fire Insurance maps circa 1885 to 1887 indicate that the plant consisted of a smelter building with 9 blast furnaces, a roaster building with 12 small and 3 large furnaces, and a fuser building with 8 furnaces, located on the eastern half of the property. Slag was deposited immediately west of the smelter building. Each building had its own stacks, ranging in height from 75 to 150 feet, connected to the furnaces by dust chambers. There were also several ancillary buildings associated with ore handling, storage, crushing, and sampling. The plant was serviced by sidings owned by the Union Pacific Rail Road.

Circa 1890, a new roaster building with initially 7 and later 14 furnaces was constructed east of the other buildings, along Wewatter Street (now Brighton Blvd), connected by dust chambers to the fuser building stack. An additional blast furnace appears to have been added to the smelter building.

Circa 1890 to 1900, the tall stack (352 ft) was constructed south of the refinery buildings, and emissions from the blast furnaces and new roasters were ducted to the stack via dust chambers. Two large dust chamber structures were constructed to convey the gases through a radiator-like pattern of chambers, to lengthen the flue and thus enhance settlement and collection of dusts and fumes. One dust chamber structure serviced the blast furnace, and the other the new roasters. It appears that the old roasters and fusers were taken out of service sometime during this time period. In fall 1901 a new 125 roaster stack was constructed adjacent to the old fuser building, although it appeared to service the new roaster building, that was also connected to the tall stack via a long dust chamber, as described above.

Operations at the Grant smelter ceased in 1903. By 1909, all of the refinery buildings had been removed, leaving the tall stack, the power house and few other support buildings, the rail road tracks, and the slag. As discussed further in response to question B.9., about half the slag appears to have been removed between 1910 and 1912, then the site remained relatively undisturbed through 1950, when the City of Denver demolished the tall stack. Historic U.S.G.S. topographic maps for the "Derby" quadrangle indicate that slag was still present on the site as late as 1950. In 1951, the Denver Municipal Stadium was built, overlapping onto the eastern corner of the site.

Maps are provided in Attachments F5 and F8.

9. Identify and describe all tailings piles, tailings ponds, waste rock dumps, product storage piles, flue dust piles, and slag heaps at the Site that you have knowledge of. Include the following:

a. The location of all former piles, ponds, dumps, stockpiles and heaps;

Lead blast furnace slag was deposited on the west side of the plant, occupying most of the northwest corner of the property. Historic maps indicate that the slag, at its maximum extent, was 4.55 acres in size, averaged 20 feet in depth, and contained approximately 147,000 cy of solid slag and 191,000 cy of broken slag. Maps depicting the slag location are provided in Attachment F8. A 1937 air photo shows the extent of slag remaining at that time, and a ponded area west of the slag. The air photo is provided in Attachment F11. Asarco has no information on other piles, ponds, dumps, stockpiles, or heaps.

b. The source of materials contained in those former piles, ponds, dumps, stockpiles or heaps;

Asarco has been unable to locate information on sources of these materials, to the extent they existed. The slag is presumed to have resulted

from smelting of lead ores from mines in Colorado and other areas (see Fell 1979).

c. A description of the materials in those piles, ponds, dumps, stockpiles or heaps and any information of documents that relate to the transport by water or wind or other means of materials from those piles, ponds, dumps, or heaps to another area.

Asarco has been unable to locate information related to the transport of these materials, to the extent they existed and were transported. Some of the slag was removed by the Amiesite Road Company, and some of the slag was presumably removed by the City of Denver circa the 1950's. The rail road companies the purchased portions of the property may also have removed some of the slag that may have been on those parcels. The materials are described to the best of Asarco's knowledge in the response to question B.9.a., and on the maps in Attachment F8.

d. All current or historical information you may have in regard to smelter emissions or other hazardous substance releases at the facilities.

Asarco has been unable to locate information related to smelter emissions. See response to question B.5 regarding release of hazardous substances during demolition of the stack by the City of Denver.

10. Excluding out-of-state shipments of product, identify whether soil (e.g., sand, loam, fill) or any other materials, including but not limited to, materials containing arsenic (e.g., slag, flue dust, arsenic trioxide, debris) have been excavated or removed (to include any sale, transfer, giving, change in ownership, or change in possession) from the Site by Respondents or others. If so, detail:

- a. Amount and date(s) of soil or other materials removed from Site;**
- b. Physical and chemical nature of materials removed;**
- c. Identity of person(s) who removed materials and date(s) of removal;**
- d. Final disposition of such materials.**

Asarco has been unable to locate information regarding the excavation or removal of such materials, if they existed, from the Omaha and Globe Smelter facility, other than the information provided on slag in response to question B.9. Amiesite apparently removed at least 6482 cy of slag. All of the slag deposited on the property was eventually moved, but the final disposition is not known. No specific

information on the physical and chemical nature of the blast furnace slag is available.

11. Provide a complete document index including, but not limited to, those documents which may provide information in regard to the following:

- a. Information on historical and current operations at the Site, including but not limited to, a detailed description of process flow, designed capacity, operating efficiency, production rates, quantities of raw materials processed, quantity and origin of mineral ores used at the Site, quantity of product shipped from the Site and waste disposal practices;**
- b. Scientific reports or documents discussing material releases on or about the Site, including but not limited to the nature and extent of smelter emission releases;**
- c. Current and historical title and ownership/lease information regarding the site;**
- d. Transaction documents supporting information provided in response to question 2 above.**
- e. Scientific reports analyzing soils, including those neighborhoods in vicinity of the Site;**
- f. Current and historical maps (including current and historical aerial maps) of the Site;**
- g. Permits related to the Site;**
- h. Environmental studies commissioned or acquired regarding the Site;**
- i. Sampling data in regard to the Site, including surrounding neighborhood;**
- j. Correspondence (e.g., reports, memorandums, letters, email) addressing contaminants on or about the Site;**
- k. Health Studies;**
- l. Legal documents/files relative to the nature, extent and cause of environmental contaminants on or about the Site;**

m. Listing and general description of pending and settled legal actions in regard to the Site and attorney representing Respondent and Plaintiff;

n. Chemical analyses of product produced at the Site.

A complete document index is attached (Attachment F12).

C. Argo Smelter (a.k.a. Boston and Colorado Smelter), approximate 80 acre facility bounded by 48th Avenue on the north, Interstate 70 on the south, Lincoln Street on the east, and Huron Street on the west:

1. Provide all information and documents you may have in regard to operations of the historical Argo Smelter.

All information and documents that Asarco has regarding the operations of the historical Argo Smelter are provided in Attachment G, including "*The Argo Works of the Boston and Globe Smelting Company*" by Donald T. Klodt, a Colorado School of Mines student paper dated March 14, 1952, (Attachment G1), which provides a good summary of the operation based on history text, technical articles, newspaper articles, and patents. Information is also provided in the following books that EPA can obtain from the Denver Public Library:

"Ores to Metals - The Rocky Mountain Smelting Industry" by James E. Fell, Jr., 1979, which provides the general history of the Argo smelter and some information on its operations.

"Colorado - its Gold and Silver Mines, Farms and Stock Ranges, and Health and Pleasure Resorts" by Frank Fossett, 1879, which describes the early Argo smelter and contains an etching of the facility circa the 1870's and provides production data for 1875 through 1878.

2. Provide all environmental studies or reports which you may have in regard to contaminates on or about the Argo Smelter facility.

TRC 1988 and TRC 1990 (the Globe Plant RI/FS reports) already referenced in response to questions A.1, A.3, and A.4, provide the results of soil samples collected on or near the former Argo Smelter facility. In addition, TRC (1988) includes groundwater data indicating arsenic and cadmium in floodplain groundwater downgradient of the former Argo Smelter site (see p. 4-66).

Sampling conducted under the Asarco Globe Plant Remedial Action includes properties located close to the former Argo Smelter site. See Attachment E2 for a list of sampling reports. These data can be provided to EPA in electronic format, if desired.

In addition, we understand that the Colorado Department of Transportation (CDOT) may have conducted some sampling on or in the vicinity of the former Argo Smelter site; however, Asarco does not have copies of these reports or data.

D. Residential Neighborhoods Surrounding Smelter Facilities (e.g., Elyria, Swansea, Cole, Clayton, Globeville):

- 1. Furnish all additional information, documents or reports you may have in regard to the source and transport of materials and contaminants located [in] the above cited neighborhoods.**

The following reports contain information related to potential sources and transport mechanisms for metals in soils in these neighborhoods:

EnviroGroup, 1998c. Evaluation of Extent of Impacts to Soils Due to Historic Air Emissions from the ASARCO Incorporated Globe Plant, Denver, Colorado. Submitted To Colorado Department of Public Health and Environment, April 7, 1998.

EnviroGroup, 1997. Evaluation of Anomalous Arsenic Concentrations in Surface Soils, Asarco Globe Plant Site, Denver, Colorado. Submitted to CDPHE, April 15, 1997. Three volumes.

TRC, 1988. Draft for Public Comment Remedial Investigation Report, ASARCO Incorporated and State of Colorado Joint Study, Globe Plant Site, Denver, Colorado. TRC Environmental Consultants, Inc., September 20, 1988. Three Volumes. Includes the results of soil reports prepared by others on behalf of CDH (now CDPHE) circa 1985. (Attachment E1).

Drexler, John D., 1998. The Source of Anomalous Arsenic Concentrations in Soils from the Globeville Community -- Denver, Colorado. Prepared on behalf of CDPHE, June 9, 1998.

Copies of the EnviroGroup Limited and TRC reports were provided to EPA previously. We understand that EPA also has a copy of the Drexler report. Please let us know if you are missing any of these reports and we will provide copies.

In addition, the following materials related to expert testimony in the C. DeBaca litigation provide information and expert opinions regarding the source and transport of contaminants and are provided in Attachment E10:

Rule 26 disclosure and deposition transcript for Alan D. Zunkel, D. Sc., P.E.

Rule 26 disclosure, deposition transcript, and disclosure of rebuttal opinions

for Andy Davis, Ph.D.

Deposition transcript for John W. Drexler, Ph.D.

2. Provide a listing and a brief summary of all environmental studies you have acquired or commissioned in regard to contamination in the above cited neighborhoods.

The following reports provide information obtained during environmental studies of Globeville commissioned by Asarco:

EnviroGroup, 1998c. Evaluation of Extent of Impacts to Soils Due to Historic Air Emissions from the ASARCO Incorporated Globe Plant, Denver, Colorado. Submitted To Colorado Department of Public Health and Environment, April 7, 1998. This study estimated the probable extent of soil impacts due to historic emissions of arsenic and lead from the Globe Plant, based on review of historic operations data and maps and air dispersion and deposition modeling. The predicted deposition was compared to present day soil concentrations by distributing the theoretical deposition through the soil column according to actual measured profiles of metals concentrations versus depth in community soils. The predicted soil concentrations were similar in pattern and typically somewhat higher than those measured in actual soil samples in all directions except toward south Globeville, where anomalous concentrations of arsenic were found on residential lawns. In addition, lead concentrations tended to rise toward the city center, consistent with other studies of lead distributions in Denver area soils (e.g., Tourtelot 1992 and Skyline Labs, Inc. 1986). Based on these findings, the study concluded that the modeling provided a reasonable and somewhat conservative estimate of soil impacts due to historic air emissions due to the Globe Plant. Predicted concentrations exceeding Statement of Work cleanup levels were confined to an area north of I-70 and west of the South Platte River.

EnviroGroup, 1997. Evaluation of Anomalous Arsenic Concentrations in Surface Soils, Asarco Globe Plant Site, Denver, Colorado. Submitted to CDPHE, April 15, 1997. Three volumes. This study evaluated potential sources of anomalous arsenic found in residential soils in Globeville, including airborne emissions, fill placement, and application of pesticides. Various lines of evidence ruled out both airborne emissions and fill placement as likely mechanisms, and were consistent with application of pesticides as the cause of the anomalous arsenic concentrations.

TRC, 1988. Draft for Public Comment Remedial Investigation Report, ASARCO Incorporated and State of Colorado Joint Study, Globe Plant Site, Denver, Colorado. TRC Environmental Consultants, Inc., September 20, 1988. Three Volumes. Includes the results of soil reports prepared by others

on behalf of CDH (now CDPHE) circa 1985. (Attachment E1). This study evaluated the nature and extent of contamination in soil and other environmental media due to releases of metals from the Globe Plant site. The study concluded that soil impacts were confined to an area north of I-70 and west of the South Platte River. It also estimated upper limits of background concentrations for arsenic, cadmium, lead, and zinc that were generally higher than natural background levels due to other urban sources.

A copy of the following study, commissioned by CDPHE, was acquired by Asarco:

Drexler, John D., 1998. The Source of Anomalous Arsenic Concentrations in Soils from the Globeville Community -- Denver, Colorado. Prepared on behalf of CDPHE, June 9, 1998. This study presented a critical evaluation of EnviroGroup 1997, and included additional metals concentration and speciation data. Drexler concluded that some of the arsenic concentrations were not consistent with normal airborne dispersion and deposition mechanisms, but did not agree that the former pesticide called PAX was the likely source of this "commercial grade" arsenic. Clarifications to this report are provided in the deposition testimony of Drexler for the C. De Baca class action suit, and rebuttal to some of the opinions expressed are presented in the deposition testimony of Davis (Attachment E10).

A report presenting additional data collected by Asarco during the C. De Baca lawsuit is currently in preparation and will be provided to EPA as soon as available. Much of the data in this report, including analyses for perlite (a known ingredient of PAX) and analyses at 2236 S. Pinon Court, a property in south Denver where PAX is known to have been used, has already been provided to EPA, and was relied upon by Davis for his deposition testimony.

Response to 104e Request for Information
List of Attachments Sent Under Separate Cover

- A. Chronology of Globe Plant Operations
- B. Documents describing Globe Plant operations
 - B1. JACA 1992
 - B2. Iles 1902
 - B3. Sadar 1952
 - B4. Globe Plant Quarterly Production Reports
- C. Information on materials removed from Globe Plant
 - C1. Map showing slag extent over time
 - C2. Slag assays
 - C3. Spent electrolyte solution analyses
 - C4. Terrace Drain soil analyses
- D. Information on releases of materials from Globe Plant
 - D1. Monthly reports of emission estimates provided to APCD
October 1996 through present
 - D2. TRI reports, 1987 through present
 - D3. Periodic Compliance Reports for sewer discharges
- E. Document Index
 - E1. List of documents referenced in response to A.1
 - E2. Index of documents produced by Asarco during the NRD lawsuit
(computer disk)
 - E3. The parties' indices of trial exhibits for the Escamilla class action lawsuit
 - E4. Indices of documents produced by Asarco during class certification for the
C. De Baca class action lawsuit, including Asarco's log of privileged
documents
 - E5. List of trial exhibits for Asarco and Century Indemnity created from INA
versus Asarco
 - E6. Index of historic engineering drawings, site maps, and aerial photographs of
the Globe Plant site

- E7. Index of reports prepared by Asarco pursuant to the Consent Decree and Statement of Work
- E8. Index of permits related to the Globe Plant
- E9. Index of real estate documents
- E10. Deposition transcripts of Davis and Drexler
- F. Documents related to the Omaha Grant site and operations
 - F1. ASARCO Annual Reports (1900 to 1939)
 - F2. Meeting Minutes in which Grant or Globe Smelters are mentioned
 - F3. Engineering & Mining Journal, April 15, 1899
 - F4. Agreement related to the 1899 transfer of the Omaha Grant property
 - F5. Property Maps
 - F6. Title transfer documents (to UPRR, CB&Q, Denver)
 - F7. History of the Grant Smelter and Stack, by R. Whitcomb
 - F8. Engineering Drawings and Site Maps
 - F9. Historic Photographs and Articles
 - F10. Newspaper clippings
 - F11. 1937 and 1950 Historic Aerial Photographs
 - F12. Omaha-Grant document Index
- G. Documents related to the Argo Smelter site and operations
 - G1. The Argo Works of the Boston and Globe Smelting Company, by D. Klodt
 - G2. Other References